

LILLE 2021: Ordovican of the World



PROGRAMME WITH ABSTRACTS

2021 Virtual Annual Meeting of IGCP 653

International Geoscience Programme Project 653 The Onset of the Great Ordovician Biodiversification Event

2021 Virtual Annual Meeting of IGCP 735

International Geoscience Programme Project 735 Rocks and the Rise of Ordovician Life – Filling knowledge gaps in the Early Palaeozoic Biodiversification

Meeting of the Subcommission on Ordovician Stratigraphy



Lille University, Villeneuve d'Ascq, France September 13–16, 2021 concentrated nearly entirely on the biohermal sections of the Crown Point Formation, with little attention paid to the sedimentology and refined stratigraphy of inter-bioherm sections. The present study focuses on a non-biohermal section of the upper Crown Point Formation, located north of Plattsburgh, Clinton County, New York, that is relatively complete and allows stratigraphic patterns of meter- to sub-meter scales to be documented. The M1B TST is expressed as a series of dense, tabular limestone beds displaying an internal tripartite division: a basal coarse biosparite with a relatively diverse open-marine fauna; a middle, thicker, dark gray biomicrite-biosparite (packstone-grainstone) composed of comminuted crinoid ossicles; and an upper sparsely fossiliferous, bioturbated biomicrite (wackestone) with discontinuous dolomitic laminae. These appear to be upward-shallowing rhythms (i.e., parasequences) and are tentatively correlated to the horizons from which bioherms initiated growth elsewhere. The overlying HST is much thicker and is dominated by roughly meterthick, very argillaceous dolomitic limestone beds. An idealized internal pattern consists of a basal set of several 10-20 cm-thick biomicrites (wackestones-mudstones) that become increasingly argillaceous upwards, overlain by a thicker (~50-60 cm) biomicrite that becomes oncoidal in its upper half, capped by a thin interval of micritic limestone interbedded with dolomitic laminae. This thick HST package is interrupted by a return to argillaceous limestones with a more open marine fauna (probably representing a 4th-order TST) with a different rhythmite motif: a basal few centimeters of siliciclastic shale overlain by 2-3 decimeter-scale, highly argillaceous limestone beds with irregular contacts, capped by a thicker, less argillaceous limestone. These meter-scale rhythms also appear to represent parasequences. Collectively, these findings comprise the first detailed integrated sedimentologic and stratigraphic interpretation of non-biohermal facies of the upper Crown Point Formation and demonstrate that apparently rhythmic bedding in this interval can be reconciled with a sequence stratigraphic framework.

Keywords: Chazy Group, Crown Point Formation, sequence stratigraphy, carbonates, rhythmic bedding, Sandbian

Discovery of rich Katian-Hirnantian jawed polychaete fauna from the Prague Basin, Czech Republic

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Abstract

Jawed polychaetes evolved and diversified extensively during the Ordovician. However, for many regions, Ordovician polychaete jaws (scolecodonts) have remained poorly documented. This applies also for the Prague Basin of peri-Gondwana, from where the last study on Late Ordovician scolecodonts was published more than 70 years ago, with just two species preliminarily identified.

We studied organic-walled microfossils from the boundary interval of Králodvor and Kosov formations (Katian-Hirnantian) at the Levín locality. We discovered that scolecodonts were much more diverse and abundant in these strata than previously thought and that the samples were also rich in chitinozoans with at least 15 taxa present. The recovered jawed polychaete fauna contains at least 17 species from 13 genera. The assemblage is taxonomically similar to the previously studied coeval Gondwanan faunas. Taxa with labidognath and prionognath type of maxillary apparatuses predominate in samples, whereas placognath and ctenognath taxa are relatively rare, which is in contrast to the Baltic polychaete faunas. Polychaetaspids predominate the Levín assemblage, followed by other families such as ramphoprionids, paulinitids, and atraktoprionids. The studied interval in the Levín section is represented by a succession of thin-bedded silty shales with various degree of bioturbation and practically devoid of shelly fossils. Reduced diversity and abundance of scolecodonts was recorded in the uppermost part of the Králodvor Formation, which correlates with lower intensity of bioturbation and finer silt fraction. The reported discovery shows wide geographical distribution and diversity of jawed polychaetes before and during the Hirnantian glaciation and mass extinction.

Keywords: Ordovician, Katian, Hirnantian, scolecodonts, jawed polychaetes, Prague Basin

Links between bioerosion and oversized benthic fossils: insights from the Upper Ordovician of Estonia, Baltica

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Abstract

Baltica was possibly the birthplace of bioerosion. Rapid diversification of bioeroding animals took place during the Late Ordovician and was related to the availability of various substrates including shelly fossils. The lower boundary of the Upper Ordovician marks also the beginning of a major increase in the diversity of bryozoan endobionts. In this study we explore the idea that the diversity and abundance of bioerosional trace fossils were enhanced by larger size of shelly fossils.

We analysed the size of selected common shelly fossils, together with the distribution of bioerosional traces, based on large paleontological collections and previous research in Estonia. Within the Upper Ordovician, two time intervals stand out for oversized or even gigantic fossils. Firstly, in the Kukruse and Haljala stages, middle Sandbian, huge trepostome bryozoans are common and include some of the largest colonies known from the Ordovician worldwide. Secondly, in the Vormsi and Pirgu stages, late Katian, oversized bryozoans, corals, gastropods, bivalves, and brachiopods are well known. Rugose and tabulate corals reach gigantic size in the next, Porkuni Stage, Hirnantian. In the Baltic region nine bioeroding ichnogenera are known from the Sandbian and six from the Katian, with distinct diversity peaks in the Kukruse-Haljala and Vormsi stages. On the other hand, Keila to Nabala stages